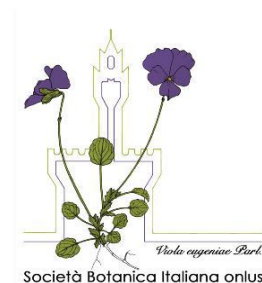


XIX Congress of European Mycologists  
Perugia, September 4<sup>th</sup>-8<sup>th</sup>, 2023



# Book of Abstracts





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## Greetings and Wishes by the Honorary Members

### **Prof. Maria Angelova**

Dear colleagues,

Dear friends,

I would like to thank the Organizing Committee for the opportunity to be a part of the big family of European mycologists. At the present meeting, I believe that many important topics will be discussed.

I wish to draw your attention to oxidative stress, one of the key phenomena of the 21st century. As eukaryotes, fungi are a convenient model to study cellular stress response. The resulting inferences can be valid for the higher eukaryotes. The research on the relationship between oxidative stress and cold exposure in Antarctic fungi is an important direction. Today we know that cold stress provokes increased generation of free oxy-radicals, accompanied by increased levels of stress biomarkers, activity of antioxidant enzymes, and expression of the genes responsible for these enzymes. At the metabolic level, many changes in the activity of the glycolytic pathway and TCA cycle were detected.

I strongly encourage young mycologists to take this research to the next level. The implementation of advanced OMICs technologies and CRISPR/Cas systems may provide a more comprehensive understanding of adaptation to cold-induced oxidative stress and survival in cold habitats.

In closing, I sincerely wish you a successful and productive forum!

### **Prof. Paola Bonfante**

Dear colleagues,

Dear friends,

Microscopic entities or giants, friends or killers, degraders or producers, fungi are everywhere: soil, air, water. Fungi play crucial roles for our planet and for all its inhabitants, from algae to plants and animals, including humans. As in the poem *Mushrooms* by Sylvia Plath, they are a symbol of soft power and determination. Even if most of them are not visible, they produce an impressive biomass, around 12 gigatons of carbon, a figure which locates them immediately after plants and bacteria, and confirms their relevance for the structure and dynamics of the biosphere. By positively or negatively impacting on plants nutrition and photosynthesis, fungi are ultimately at the basis of the Earth food webs, with a strong influence on crop productivity and food safety.

We do not know how many fungi are still there, waiting to be discovered. Among what is left to be done is a better understanding of their diversity (also by sequencing their genomes), and of how their activities may be impacted by climate change. We should also aim at deciphering the molecular basis of their impressive ability to exploit a large variety of substrates.

As researchers and mycologists, we have the duty to bring fungi at center stage of scientific communication and to highlight to society their importance for the balance of our planet.

### **Prof. Silvano Onofri**

Dear colleagues,

Dear friends,

To be a mycologist. The passion to walk in the wood since very young, searching and trying to recognizing fungi; the chance to have a great success in the Mycology examination at the University, resulting in the offer from the professor to attend the Mycology Laboratory at the University of Rome for internship. The insatiable curiosity of knowing the name of the encountered organism, its role in the ecosystem, its functioning and limits of life. The difficulties encountered to be accepted within international projects, as an expert of microfungi: they are not part of microbiology or botany! The long friendship with Walter Gams, my Mentor and Teacher for taxonomy and systematics of fungi. The great opportunity to visit and exploring Antarctic mycology, the best way to understand the extraordinary capability of resistance and resilience of the extraordinary Kingdom of Fungi. The chance to meet and work with E. Imre Friedmann and Gerda Hornek, discovering the cryptoendolithic world and the possibility to study the microbiology in space, until the International Space Station, demonstrating that Antarctic microfungi could survive in space and on Mars, possibly actively metabolizing in the martian subsurface. To be proud to know that nowadays Mycology is a well-respected (and funded!) independent science, with large unknown fields, deserving to be explored.



**Beatrice Senn-Irlet**

Dear mycologists, dear friends

It gives me a great pleasure to be able to meet you all in person again. What is mycology, what is science without meetings, without congresses? On the one hand, the individual research can be presented to a wide audience and even if the results have already been published, the personal presentation is always much more impressive and unforgettable because the researcher is visible in all his personality. Yes, also in science the context is often important. The results of modern, often rather abstract research become more approachable.

The personal exchange of ideas is immensely important, even apart from the lectures. It is only in the mutual exchange of ideas that other views become more easily understandable and new questions emerge which may lead to new joint projects.

Congresses are always opportunities to meet old friends. They always give us new impetus to move forward. We are a family!

And it is always a pleasure to welcome young mycologists. They will carry our field forward.

I am looking forward to exciting lectures and poster sessions to get to know many new aspects of mycology. The topic of fungi is currently experiencing a real hype (keyword: Fantastic Fungi), the underground network is fascinating, the biology of these organisms is fascinating. Fungi are even incorporated in revised national constitutions.



## **Preliminary investigation on antioxidant, antibacterial and antiproliferative activities on *Pleurotus eryngii* var. *thapsiae*, as potencial source of bioactive compounds.**

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Since ancient times mushrooms have been appreciated as food, and in more recent years their medicinal properties have been increasingly exploited. Apart from their use as simple foods, mushrooms are being explored as functional ingredients in the development of novel foods, mushroom-based products, and food supplements. Several studies on medicinal mushrooms have highlighted their wide pharmacological activities, including antioxidant, antimicrobial, anti-inflammatory, and antitumor properties. These pharmacological effects can be attributed to the rich bioactive metabolites composition found in fungi, primarily in the mycelium and sporophores (1).

The most studied molecules are phenolic compounds, proteins, fatty acids, terpenes, terpenoids, steroids, and vitamins (2). Several reports have also been conducted on polysaccharides, which are the structural components of the mushroom cell wall and exhibited a strong biological activity (3). Heteroglycans, peptidoglycans, and polysaccharide-protein complexes are polysaccharides that contribute to functional properties that mushroom are known to have, but the most abundant and well-known compounds are  $\alpha$ - and  $\beta$ -glucans.

*Pleurotus* (Fr.) P. Kumm. is one of the most widely taxonomic group and include different cultivated and economically important mushrooms. These mushrooms are widely used in human nutrition all over the world and are also recognized as medicinal mushrooms. The genus includes facultative saprotrophs or biotrophs which grow in association with plants of the Apiaceae family, the *P. eryngii* species complex is undoubtedly noteworthy (4).

In this study, we focused on the use of *P. eryngii* var. *thapsiae* Venturella, Zervakis & Saitta, whose basidiomes grow in association with *Thapsia garganica* L. and have been currently reported so far only in Sicily (Italy). The basidiomes growing on two different substrates were used, the first based on wheat straw and the second based on a mixture of wheat straw and *Aegilops* spp., a common wheat weed. Aqueous crude extracts produced by two different techniques, conventional low-temperature, and ultrasound-assisted extraction, were used. These extracts were tested by radical scavenging activity (DPPH), thiobarbituric acid reactive substances (TBARS) formation inhibition, oxidative haemolysis inhibition assay (OxHLIA), antimicrobial (food and clinical bacteria and fungi) and antiproliferative assays on different human tumor cell lines. Preliminary results showed interesting antimicrobial activities against several Gram-positive and Gram-negative bacteria, including multi-resistant strains, as well as antifungal activities against *Aspergillus brasiliensis*. Regarding antiproliferative potential, very interesting results were observed against gastric (AGS), colorectal (CaCo-2), breast (MCF7), and liver (NCI-H460) cancer cell lines. Further evaluation of the biological activities and chemical characterization of polysaccharides within the extracts is in progress.

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